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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/751,551	12/28/2000	Jingyu Lian	00 P 9119 US	9195

7590 12/03/2001

Siemens Corporation  
Intellectual Property Department  
186 Wood Avenue South  
Iselin, NJ 08830

EXAMINER

ORTIZ, EDGARDO

ART UNIT	PAPER NUMBER
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2815

DATE MAILED: 12/03/2001

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.  
09/751,551

Applicant(s)

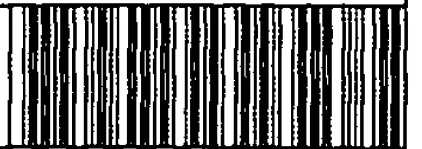
Lian Et.al.

Examiner

Edgardo Ortiz

Art Unit

2815



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on Dec 28, 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some\* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\*See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892) 18) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 19) ☐ Notice of Informal Patent Application (PTO-152)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). \_\_\_\_\_ 20) ☐ Other:

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### DETAILED ACTION

This Office Action is in response to an application filed December 28, 2000.

#### *Election/Restriction*

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-13, drawn to a multi-layer electrode for an integrated circuit, classified in class 257, subclass 310.
  - II. Claim 14-20, drawn to a method of fabricating an electrode of an integrated circuit, classified in class 438, subclass +1.
2. The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MEP. § 806.05(f)). In the instant case unpatentability of the group I invention would not necessarily imply unpatentability of the group II invention, since the device of the group II invention could be made by processes materially different from those of the group I invention. For example, the multi-layer electrode for an integrated circuit can be produced by a method of fabrication on which a layer of iridium material is deposited over a conductive barrier layer to inhibit oxygen diffusion.

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3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, the fields of search are not coextensive and separate examination would be required, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Stanton C. Braden (Reg No. 32,556) on November 14, 2001; a provisional election was made without traverse to prosecute the invention of a semiconductor device, Claims 1-13. Affirmation of this election must be made by an applicant in replying to this Office Action. Claims 14-20 are withdrawn from further consideration by the examiner, 37 CFR 1.142 (b), as being drawn to a non-elected invention.

5. Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

6. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(I).

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***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 8, 10 and 13 are rejected under 35 U.S.C. § 102 (b) as being anticipated by Okudaira et.al. (U.S. Patent No. 5,442,213). With regard to Claim 1, Okudaira teaches a conductive barrier layer (143), a first conductive liner (144) deposited over the conductive barrier layer, a second conductive liner (145) and a conductive layer (146) deposited over the second conductive liner, wherein the conductive layer and the first conductive liner comprise the same material.

With regard to Claim 2, Okudaira teaches a second conductive liner (145) comprising a conductive oxide.

With regard to Claim 8, Okudaira teaches a conductive barrier layer (143), a first conductive liner (144) deposited over the conductive barrier layer, a second conductive liner (145) deposited over the first conductive liner, the second conductive liner comprising a conductive oxide and a conductive layer (146) deposited over the second conductive liner, wherein the conductive layer and the first conductive liner comprise the same material.

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With regard to Claim 10, Okudaira teaches a conductive layer (146) and a first conductive liner (144) comprising Pt.

With regard to Claim 13, Okudaira teaches an integrated circuit comprising a DRAM.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-5, 7, 9 and 11 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Okudaira et.al. (U.S. Patent No. 5,442,213). With regard to Claims 3, 5, 9 and 11; Okudaira essentially discloses the claimed invention but fails to show, the thickness of the first and second conductive liners. It would have been an obvious modification to someone with ordinary skill in the art, at the time of the invention, to modify the structure as taught by Okudaira to include the thickness of the first and second conductive liners as claimed, in order to increase the breakdown voltage and decrease current leakage.

With regard to Claim 4, Okudaira teaches a conductive layer (146) and a first conductive liner (144) comprising Pt.

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With regard to Claim 7, Okudaira teaches an integrated circuit comprising a DRAM.

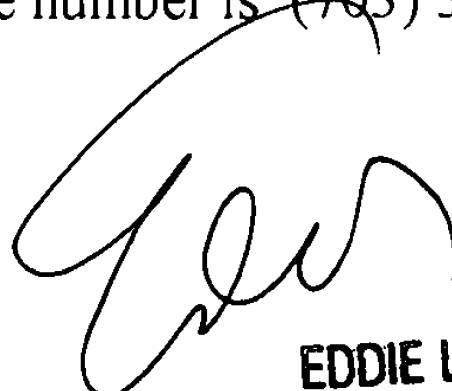
Claims 6 and 12 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Okudaira et.al. (U.S. Patent No. 5,442,213) in view of Yokoyama et.al. (U.S. patent No. 6,313,539). Okudaira , as stated supra, essentially discloses the claimed invention but fails to show, a conductive barrier layer comprising TaSiN. Yokoyama teaches a conductive barrier layer (516) comprising TaSiN integrated in a semiconductor memory device such as DRAM and FRAM. Therefore, it would have been an obvious modification to someone with ordinary skill in the art, at the time of invention, to modify the structure disclosed by Okudaira to include a conductive barrier layer comprising TaSiN, as taught by Yokoyama, because of its known anti-heat and anti-oxidation properties.

### *Conclusion*

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Edgardo Ortiz (Art Unit 2815), whose telephone number is (703) 308-6183. In case the Examiner can not be reached, you might call Supervisor Eddie Lee at (703) 308-1690. Any inquiry of a general nature or relating to the status of this application should be directed to the Group 2800 receptionist whose telephone number is (703) 308-0956.

EO/AU 2815

11/16/01

  
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SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800